

REMARKS

The specification, drawings and claims have been amended to improve the style of this application. Claims 1 - 19 are in this application and are presented for consideration. Claims 1 - 10 and 12 - 14 have been amended and new claims 15 - 19 have been added.

Claims 1 - 3 and 6 - 8 have been rejected as being anticipated by European Patent Application '915.

Independent claims 1 and 10 have been amended to set forth further features with regard to the upper and lower trailing surfaces. In particular these claims set forth that the lower trailing surface is formed as a curved surface with a first curved part and a second curved part and that two curved portions with different centers of curvature form a curved trailing surface with the degree of convergence with the upper trailing surface increasing toward the trailing edge. Support for this can be found in the specification on page 8 lines 15 - 20 and page 10 lines 8 - 15.

Applicant has reviewed '915 and finds no teaching nor suggestion of trailing surfaces having curves shaped as set forth in independent claims 1 and 10. In particular, Applicant notes that element 37 of '915 is not similar to the upper trailing surface of the present claims since it appears that element 37 is not curved, but instead is straight or flat. Furthermore, it appears that element 36 cannot be equated with the upper trailing surface since it does not converge to a trailing edge. Element 40 of '915 cannot be equated with the lower trailing surface of the present claims since element 40 also appears to be straight and not to have a curve. Applicant notes that element 38 cannot be the lower trailing surface, since it does not

converge to a trailing edge and is also not curved.

Applicant acknowledges that Figures 4 and 6 of '915 show curved surfaces. Applicant notes that claims 1 and 10 further set forth that the degree of convergence of the present trailing surfaces increases towards the trailing edge. Applicant finds no teaching nor suggestion of this feature in Figures 4 and 6 of '915. Therefore Figures 4 and 6 of '915 also cannot anticipate all the features of claims 1 and 10.

New claim 15 has been added setting forth that the blade portion includes a first and second trailing surface. In the embodiment of present Figure 4, these first and second surfaces are represented by references 22 and 24. Claim 15 further sets forth that the first and second trailing surfaces each have a convex curve. This is quite evident from present Figure 4. Applicant has reviewed '915, and does not find any teaching nor suggestion of two trailing surfaces having a convex curve. As Applicant has previously pointed out with regard to Figure 2, element 37 appears to be a flat surface and element 40 also appears to be a flat surface. Figure 4 of '915 shows element 10 which appears to be straight, and therefore element 10 cannot represent one of the trailing surfaces of claim 15.

Applicant further notes in Figure 6 of '915, that element 10 on the upper right portion, appears to be concave, and therefore cannot anticipate the convex curve of claim 15. Therefore these portions of '915 cannot anticipate the first and second trailing surfaces of new claim 15. Applicant finds no teaching nor suggestion of any other structure in '915 which anticipates the trailing surfaces of claim 15. Therefore claim 15 cannot be anticipated by '915.

Claims 4, 5, 9 - 14 have been rejected as being obvious over '915 in view of Mikeska.

Applicant notes that Mikeska is not used to anticipate the shape of the trailing surfaces of the present invention. Applicant has reviewed Mikeska, and finds no teaching nor suggestion of the trailing surfaces of the independent claims. Therefore it is Applicant's position that the combination of '915 and Mikeska does not cause the independent claims to be obvious.

Claim 16 sets forth that the first and second trailing surfaces have their convex curve continuously from respective transition zones to the trailing edge. This can be seen in the present Fig. 4. Applicant finds no teaching nor suggestion of this feature in the applied prior art, and therefore claim 16 further defines over the prior art.

Claims 17 - 19 set forth further features of the curves of the trailing surface, especially features which are similar to those newly added features to claim 1. As described above, those features are not present in the applied prior art, and therefore claims 17 - 19 further define over the prior art.

The present invention is not anticipated by EP 0 914 915 A1 as that cutter knife has a different shape compared to the embodiment of the present invention. EP 0 914 915 A1 shows a knife of a cutter which has a mountain-shaped guide surface, whereas the embodiment of the present invention has a sickle form which is clearly described in the description of the preferred embodiment.

The object of EP 0 914 915 A1 is to prevent the occurrence of a shape defect even in a resin material with high MFR (melt flow rate) by reducing the rotating resistance of knife to water to suppress the turbulence and cavitation and minimizing the generation of a turbulent part trailing the knife as much as possible.

An object of the present invention is to provide a knife for cutting machinery, particularly for high-speed applications with improved hydrodynamic qualities, particularly useful for cutting all kinds of polymer in an underwater pelletizing machine.

As the expert can see there is quite a difference in the objects of the several inventions. In no way deals the EP 0 914 915 A1 with a high-speed cutter with improved hydrodynamic qualities. Therefore, the expert cannot gather obviously any advice from the EP 0 914 915 A1 document.

The object of the EP 0 914 915 A1 is solved by a cutter knife which is formed so that the rotating directional height dimension is thinned in order to reduce the velocity of the circling directional water flow generated toward the front surface of the die (see claim 1).

The blade body portion of the present invention comprises a leading edge with a cutting blade portion and an upper leading surface and a lower leading surface extending from said leading edge to a transition zone and a blade body trailing edge and an upper and lower trailing surface extending from said transition zone to said trailing edge, said upper and lower trailing surfaces converging (at trailing edge 20) to form a hydrodynamically shaped blade body portion.

The new blade body portion which is designed under the knowledge and experience of aerodynamics transformed on hydrodynamics was found by application of newest technology as finite elements analysis and computational fluid dynamics. Therefore, the shape of the configuration of the cutter blade portion is absolutely new regarding the special design under hydrodynamically aspects for high-speed applications.

Also the combination of EP 0 914 915 A1 and US 5,052,911 as suggested by the Examiner would not lead to the special embodiment of the present invention.

US Patent 5,052,911 shows merely an arcuate impeller surface to be at a light angle to the horizontal in Fig. 3, 6 and 7; i. e. the impeller surface is angled slightly upward in the direction of rotation. Preferably, the angle is about 10 degrees. The angle must not be too great, less than 45 degrees, otherwise the purpose will be defeated by suction and circulation of water behind and through the blade. Additionally, greater angles cause wear on the die face (column 2, lines 33 to 41).

In contrast to US 5,052,911 the present invention prefers an upper leading surface which forms a 45 degree angle with respect to the general plane of the pelletizing die plate 210 (the plane of cutting). Although other angles are possible, the 45 degree angle promotes a proper movement of the pellets away from the cutting face of the pelletizing die plate 210 while also providing good hydrodynamic qualities.

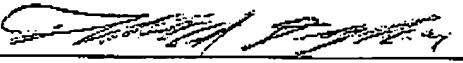
The design of the embodiments of the present invention with two curved parts on the upper and lower trailing surfaces converging to form a hydrodynamically shaped blade body portion clearly distinguishes against the arcuate impeller of US 5,052,911 the surface of which is angled slightly upwards in the direction of rotation, preferably the angle is only about 10 degrees. Therefore, for an expert the combination of the objects of EP 0 914 915 and US 5,052,911 would obviously not arrive to the special embodiment of the present invention.

If the Examiner has any comments or suggestions which would further favorable prosecution of this application, the Examiner is invited to contact Applicant's representative

by telephone to discuss possible changes.

At this time Applicant respectfully requests reconsideration of this application, and based on the above amendments and remarks, respectfully solicits allowance of this application.

Respectfully submitted
for Applicant,

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Enclosed: (2) Replacement Sheets of Drawings

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